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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,885	11/27/2001	Ishai Schwarzband	P-3373-US	7697
27130	7590	02/08/2005	EXAMINER	
EITAN, PEARL, LATZER & COHEN ZEDEK LLP 10 ROCKEFELLER PLAZA, SUITE 1001 NEW YORK, NY 10020			PATHAK, SUDHANSHU C	
			ART UNIT	PAPER NUMBER
			2634	

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/993,885	Applicant(s) SCHWARZBAND, ISHAI	
	Examiner Sudhanshu C. Pathak	Art Unit 2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on November 27th 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on November 27th, 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. Claims 1-to-20 are pending in the application.

Specification

2. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 7 & 15 recites the limitation "said controller" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 6-9 & 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Sylvain et al. (4,782,525).

Regarding to Claims 1, 6-9 & 14-16, Sylvain discloses a system for repeating a digital signal, comprising a connector adapted to be connected to a twisted pair of wires (Fig. 1 & Column 1, lines 17-33 & Abstract, lines 1-5 & Claim 3); and a circuit operatively connected to said connector (Fig. 1 & Column 2, lines 34-42) comprising a hybrid adapted to convert a bi-directional signal into an input signal and an output signal (Fig. 1, element 14 & Column 2, lines 42-47 & Claim 1); and a signal subtractor adapted to receive said input signal and to subtract therefrom an estimated echo signal produced by an echo estimation unit adapted to derive said estimated echo signal from said output signal (Fig. 1, elements 18, 20, 42 & Column 2, lines 6-25, 42-55, 62-68 & Column 3, lines 1-8 & Claim 1). Sylvain further discloses a second hybrid (Fig. 1, element 26), a second subtractor (Fig. 1, element 30) and a second echo estimation unit adapted to derive a second estimated echo signal from an output signal of said second hybrid (Fig. 1, elements 32, 42 & Column 2, lines 25-68 & Column 3, lines 1-20). Sylvain further discloses the second echo estimation unit is comprised of a second digital filter operatively connected to said controller (Fig. 1, elements 42, 32). Sylvain further discloses the controller to be adapted to regulate said second digital filter's transform characteristics such that said second digital filter is adapted to transform a sampled version of said second output signal into a sampled version of said second estimated echo signal (Fig. 1, elements 42, 32, 44-50 & Column 2, lines 6-25, 62-68 & Column 3, lines 8-35 & Claim 1).

Claim Rejections - 35 USC § 103

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7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2-4, 10-12 & 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sylvain et al. (4,782,525) in view of Gysel et al. (5,633,863).

Regarding to Claims 2 & 10, Sylvain discloses a system for repeating a digital signal comprising a repeater circuit further comprising a hybrid adapted to convert a bi-directional signal into an input signal and an output signal; and a signal subtractor adapted to receive said input signal and to subtract therefrom an estimated echo signal produced by an echo estimation unit adapted to derive said estimated echo signal from said output signal as describe above. Sylvain further discloses an analog-to-digital converter (ADC) (Fig. 1, element 28 & Column 2, lines 50-61) so as to convert the echo signal into a digital signal for echo estimation in the adaptive transversal (digital) filter (Fig. 1, element 20 & Column 2, lines 1-25, 62-68 & Column 3, lines 1-20). However, Sylvain does not disclose the echo estimation unit to further comprises a digital-to-analog converter (DAC).

Gysel discloses an echo cancellation circuit wherein the echo cancellation is fully accomplished in the analog region of the received path (Fig. 2 & Column 5, lines 58-63). Gysel further discloses that implementing the echo

compensation in the analog region requires an additional component a digital-to-analog converter (DAC) which converts the digital echo signal, estimated by the adaptive digital filter into an analog echo signal (Fig. 2, element "DAA" & Column 5, lines 63-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Gysel teaches implementing an DAC in an echo cancellation unit and this can be implemented in the echo estimation unit as described in Sylvain so as to convert the estimated digital echo signal into an analog echo signal so as to further perform the echo compensation (cancellation) in the analog domain. Furthermore, performing the compensation in the analog domain would require the modification of the system as described in Sylvain by performing the ADC function of the received signal in both directions to be performed after the compensation (subtraction).

Regarding to Claims 3-4, 11-12 & 18-19, Sylvain in view of Gysel discloses a system for repeating a digital signal comprising a repeater circuit further comprising a hybrid adapted to convert a bi-directional signal into an input signal and an output signal; and a signal subtractor adapted to receive said input signal and to subtract therefrom an estimated echo signal produced by an echo estimation unit adapted to derive said estimated echo signal from said output signal wherein the echo cancellation is performed in the analog domain as describe above. Sylvain further discloses the echo estimation unit further comprising a controller adapted to monitor said output signal and to regulate the transform characteristics of said digital filter as a function of one

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or more of said output signal's parameters such that said filter is adapted to transform a sampled version of said output signal into a sampled version of said estimated echo signal (Fig. 1, elements 42, 20, 44-50 & Column 2, lines 6-25, 62-68 & Column 3, lines 8-35 & Claim 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Sylvain in view of Gysel satisfies the limitation of the claim.

Regarding to Claim 17, Sylvain discloses a method of reducing an echo in a first signal leaving a hybrid caused by leakage from a second signal entering the hybrid, said method comprised of sampling the second signal, filtering the sampled signal (Fig. 1 & Column 2, lines 50-68 & Column 3, lines 1-7). However, Sylvain does not disclose converting the sampled signal into an analog signal and subtracting the analog signal from the first signal.

Gysel discloses an echo cancellation circuit wherein the echo cancellation is fully accomplished in the analog region of the received path (Fig. 2 & Column 5, lines 58-63). Gysel further discloses that implementing the echo compensation in the analog region requires an additional component a digital-to-analog converter (DAC) which converts the digital echo signal, estimated by the adaptive digital filter into an analog echo signal (Fig. 2, element "DAA" & Column 5, lines 63-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Gysel teaches implementing an DAC in an echo cancellation unit and this can be implemented in the echo estimation unit as described in Sylvain so as to convert the estimated digital echo signal into an analog echo signal so as to

further perform the echo compensation (cancellation) in the analog domain.

Furthermore, performing the compensation in the analog domain would require the modification of the system as described in Sylvain by performing the ADC function of the received signal in both directions to be performed after the compensation (subtraction).

9. Claims 5, 13 & 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sylvain et al. (4,782,525) in view of Gysel et al. (5,633,863) in further view of Jones (6,310,909).

Regarding to Claims 5, 13 & 20, Sylvain in view of Gysel discloses a system for repeating a digital signal comprising a repeater circuit further comprising a hybrid adapted to convert a bi-directional signal into an input signal and an output signal; and a signal subtractor adapted to receive said input signal and to subtract therefrom an estimated echo signal produced by an echo estimation unit adapted to derive said estimated echo signal from said output signal wherein the echo estimation unit further comprises a controller for monitoring the output signal and to regulate the characteristics of the digital filter so as to estimate the echo signal wherein the echo cancellation is performed in the analog domain as describe above. However, Sylvain in view of Gysel does not disclose a low pass filter at the output of the DAC.

Jones discloses implementing a low pass filter at the output of the DAC to remove the undesirable high frequency components generated by the DAC (Fig. 1, elements 16, 17 & Column 6, lines 10-20). Therefore, it would have

been obvious to one of ordinary skill in the art at the time of the invention that Jones teaches implementing a low pass filter at the output of the DAC and this can be implemented in the echo estimation unit as described in Sylvain in view of Gysel so as to remove the undesirable high frequency components generated by the DAC before performing echo cancellation in the analog domain, thus satisfying the limitations of the claims.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, it is recommended to the applicant to amend all the claims so as to be patentable over the cited prior art of record. A detailed list of pertinent references is included with this Office Action (See Attached "Notice of References Cited" (PTO-892)).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sudhanshu C. Pathak whose telephone number is (571)-272-3038. The examiner can normally be reached on M-F: 9am-6pm.

- If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571)-272-3056
- The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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- Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sudhanshu C. Pathak



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